

REMARKS

Remarks

Claims 1-35 are pending and stand rejected. In response, claims 1-35 are cancelled and new claims 36 to 55 added. The new claims are presented to remove the "whereby" structural clause in response to the Examiner's last comments. The desired features of the claimed invention are presented in a product by process format to place the claims in better condition for allowance. Product by process language is supported, for example, on page 17 line 9 through page 18 line 2. The term "crosslinked acrylic fiber" recited in the independent claims in place of "polyacrylate-series" is supported, for example, on page 6 line 15-16 of the specification. The term "homogeneously blending the first fiber with the second fiber or feather in a weight ratio of between 1 to 9 and 4 to 6" recited in claims 36 and 46 is supported, for example, on page 20 lines 17 to 24 and page 21 lines 14-16. The use of at least 100 degrees centigrade to dry fiber (claim 39) is supported, for example on page 13 line 5. The process variables recited in claims 40 and 41 are supported, for example, on page 25, lines 22-25. The added elements of 42 (cutting into lengths of 3 to 15 mm) is supported, for example on page 17 line 8. The term "non cationic dispersant" recited in claim 51 is supported, for example by the sentence bridging pages 17 to 18. The recitation of conditions in claim 55 is supported, for example, by page 18 lines 21 to 24.

Reconsideration and allowance are requested.

Rejections - 35 USC 112 Enablement

The Examiner on page 2 item 4 of the office action has rejected claims that recite "polyacrylate-series fiber" on alleged enablement grounds. Applicants point out

that the best mode chemistry does not limit the claims because a skilled artisan easily knows how to make a basic polymer such as polyacrylate-series fiber. Naming of this fiber, as provided, for example, on page 13 lines 16-18; page 15, lines 2-3_and on page 19 line 13, suffices to direct a skilled artisan to employ the proper starting materials. However, to advance prosecution, a more constructive term has now been used instead for a majority of the new claims. The independent claims now state "crosslinked acrylic fiber." Only new dependent claim 43 adds the further element of "polyacrylate-series."

Rejections - 35 USC 112 Indefiniteness

The Examiner on page 3, has rejected claims 16 and 21 on alleged indefiniteness grounds in view of the phrase "at least 50 ml of air per gram." This phrase has been deleted in all claims. In the specification, examples of the heat retaining fiber are specifically listed from page 5, line 15 to page 6, line 6. Reconsideration and removal of this rejection are solicited.

The Examiner has rejected claim 21 because "applicant identifies the 'heat retaining fiber' as 'feather.'" In response, applicants point out that, while such identification is not very common, the specification clearly provides a one to one identity. For example, page 17, lines 5 to 6 states "feather is blended as the heat-retaining fiber" and page 19 line 11 states "the heat retaining fiber is feather." Use of the word "is" in this context means that feather is meant for inclusion in the fiber group. Applicants rely on this definition in the specification, but in order to advance prosecution, have presented all the new independent claims with the term "second heat retaining fiber or feather" to emphasize the inclusion of feather in this operational group. The specification wordage and context "feather is blended as the (second) heat retaining fiber" has been copied from the specification (page 17 lines 5-6) to further include this as a process step embodiment of applicant's invention in claim 37.

Reconsideration and allowance are requested.

Rejections - 35 USC 103

From the bottom of page 3 through page 7, the Examiner has asserted several obviousness prior art arguments. A first main point is: "the functional 'whereby' statement does not define any structure and accordingly cannot serve to distinguish." In other words, presenting "whereby" followed by a recitation of structure does not define a claim. Applicants have directly responded to this point by reformatting all claims into a product by process format that recites the very special and unobvious manufacturing techniques that typically are used to manufacture the product.

Product Uniquely Made by a Claimed Process

The UNIQUE PRODUCT STRUCTURE is linked to the claimed method of production and is not made by any other known process. It was found, as explained below, that regular manufacturing processes fail to blend and disperse the moisture absorbent/releasable heat-generating fiber in feather homogeneously, so that the resulting blended material is lumpy or otherwise non-homogeneous and performs poorly as a garment material. Now, all claims have been changed into a product by process format corresponding to the structure. In this regard applicants point out that the product produced by the claimed processes has a corresponding unique structure, namely homogeneous mixing of the claimed polymer as examined in the first office action that directly results from the unique manufacturing technique and is not, to applicants' knowledge, obtainable by any other process. That is, the manufacturing steps claimed, directly cause a unique quality of product and are directly traceable to that product.

The Claimed Process Differs Greatly from Regular Clothing Processes

If the moisture absorbent/releasable heat-generating fiber is blended and dispersed in feather by a regular process, the moisture absorbent/releasable heat-generating fiber forms ball-like masses and accumulates at the bottom of a blending machine. In order to prevent formation of ball-like masses and to achieve homogeneous dispersion and blending of the materials, the claimed invention adopts a special manufacturing process that is far different from known processes.

As described on page 3 lines 10 to 14, factories usually handle such fiber in a humidified atmosphere to avoid generating static electricity. Applicants surprisingly found that they had to abandon regular processes and use either very low humidity or very high (saturated) humidity prior to blending to achieve "a stable blending ratio" as described on page 3 line 18. One of the features of the discovered process that gives rise to the specific type of product claimed (homogenous, without lumps), is adjusting and combining the two claimed materials in a desirable weight ratio, as stated on page 20 lines 17 to 24. The specific discovered ratio that avoids lumps in the final product stated here has been imported into the claims (36 to 54), and directly affects the quality of the claimed product. The claims recite this important process variable as "homogeneously blending the first fiber with the second fiber or feather in a weight ratio of between 1 to 9 and 4 to 6."

An additional feature of the discovered process that gives rise to the specific type of product claimed (homogeneous, without lumps), is utilizing the dry process or the wet process as a manner of blending and dispersing the two claimed materials homogeneously, as disclosed in the specification from page 17, line 9 to page 18, line 2. Firstly, the amended claims 36-45 recite the use of very dry conditions. Secondly, amended claims 46-54 concern the use of the wet process wherein the two materials are blended in a water flow. In particular, if the moisture absorbent/releasable heat-

generating fiber was blended and dispersed in feather by the wet process, the blended material was subjected to dewatering and drying steps to give a product. During these steps, the moisture absorbent/releasable heat-generating fiber SHRANK and BECAME ENTANGLED with the feather, so that the resulting product can keep the fiber and feather in the dispersed/blended state without difficulty. Compared with processes carried out under a normal atmosphere, the processes performed in very dry conditions and in wet conditions were highly desirable and showed unexpected results.. Claims 36-54 specifically recite this important feature.

Applicants point out that the material and methods described in the cited Japanese patent (2028467 - JP-6-294006A) result in formation of a fiber that is susceptible to moisture and forms ball-like masses in normal atmospheric conditions, during manufacture, during shipment, or during use. Although the extraordinary moisture absorbing/releasable heat-generating fiber has these great properties by itself, the fiber cannot be stored or used in a well-opened dry state after manufacture. In order to blend this fiber with feather homogeneously, while preventing the fiber from turning into ball-like masses, the blending must be carried out in an unusual condition wherein the moisture absorbent/releasable heat-generating fiber is kept in the dry state (recited in claims 36-45) or where the fiber is completely immersed in a water bath (recited in claims 46-54).

Other distinguishing process elements that combine to produce the unique product are, using "a first moisture-absorbing heat generating fiber that comprises a crosslinked acrylic fiber prepared by crosslinking with a nitrogen containing compound and by hydrolysis of uncrosslinked residues" as a major ingredient, as now recited in the claims.

These several process variables combine to produce the unique product made by the claimed process. These process parameters are recited in claims 36 to 54, are unusual and are not described either inherently or explicitly in the asserted prior art documents. Accordingly, reconsideration and allowance of the re-formatted claims respectfully are requested.

Further Distinguishing Process Parameters in Dependent Claims

Other highly desirable manufacturing process elements are further claimed in dependent claims. The use of at least 100 degrees centigrade to dry the first fiber prior to blending is not a common condition and is claimed in claim 39. This process variable is described on page 13 line 5 of the specification. Another highly desirable manufacturing process element is to heat the first fiber in a drying furnace and then to cool the fiber inside that same furnace with dry air, as recited in claim 40. Yet another desirable process variable is to substitute the inside space of the drying furnace with dry air following this step, as recited in claim 41 (supported by the specification on page 25, lines 22-25). Yet another highly useful process step that contributes to the homogeneity and less bulkiness of the product is to cut the first fiber into lengths of 3 to 15 mm as now recited in claim 42 (supported by the specification on page 17 line 8). Still another important process that contributes to the product quality is to compress and reduce the first fiber to inhibit moisture uptake, as now claimed in claim 44. Other dependent claims further recite unobvious process conditions that contribute to the product quality such as use of feather wash water to wet the first fiber (claim 50) and use of a non-cationic dispersant to facilitate the homogenous blending, as recited in claim 51. These dependent claims (claims 39 to 52) thus recite further distinguishing features that additionally are not described inherently or explicitly in the asserted publications. Reconsideration and allowance of these claims respectfully are requested.

New claim 55 also (as all other pending claims) recites the same chemical cross linked fiber as in the cancelled claims, but adds a very different process that is not described in any of the asserted references. Here, static electricity is exploited in combination with highly dried material as previously claimed, to build up non-covalent assemblages between pulverized first fiber and the second heat retaining fiber or feather. This feature is described in the specification, for example, on page 18, lines 21 to 24. Reconsideration and allowance of the polymer blend material formed by this process respectfully are requested.

In view of this amendment and applicants' remarks above, applicants respectfully submit that the application is in condition for allowance. If any additional fees or additional extensions of time are required with the filing of this Amendment, Applicants respectfully request such fees and extensions be charged to Deposit Account No. 08-1641.

Respectfully submitted,

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Date

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